

No.

200000312



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

World Wide Wheat, T. T. C.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE SEED. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, DURUM

'Crown'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twelfth day of September, in the year two thousand one.

Attest:

Paul M. Janboudi

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

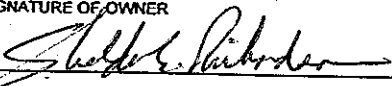
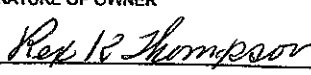
Andrew M. ...

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICEAPPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER World Wide Wheat, L.L.C.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME D3117		3. VARIETY NAME Crown	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 2850 South 36th Street Suite A-9 Phoenix, Arizona 85034		5. TELEPHONE (include area code) 602/470-1345		FOR OFFICIAL USE ONLY PVPO NUMBER 200000312 FILING DATE 7/28/2000	
		6. FAX (include area code) 602/470-1685			
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Limited Liability Company		8. IF INCORPORATED, GIVE STATE OF INCORPORATION Arizona		9. DATE OF INCORPORATION July 31, 1996	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Rex K. Thompson 2850 South 36th Street Suite A-9 Phoenix, Arizona 85034 Sheldon E. Richardson 2850 South 36th Street Suite A-9 Phoenix, Arizona 85034					FILING AND EXAMINATION FEES: \$ 2450.00 DATE 7/28/2000 CERTIFICATION FEE: \$ 320.00 DATE 8/17/01
11. TELEPHONE (include area code) 602/470-1345		12. FAX (include area code) 602/470-1685		13. E-MAIL worldwheat@uswest.net	
14. CROP KIND (Common Name) Durum		15. GENUS AND SPECIES NAME OF CROP Triticum turgidum L. variety durum			
16. FAMILY NAME (Botanical) Gramineae		17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)					
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)					
19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input checked="" type="checkbox"/> YES (If "yes", answer Items 20 and 21 below) <input type="checkbox"/> NO (If "no," go to Item 22)					
20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO					
21. IF "YES" TO ITEM 20, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED					
22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)					
23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)					
24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF OWNER 			SIGNATURE OF OWNER 		
NAME (Please print or type) Sheldon E. Richardson			NAME (Please print or type) Rex K. Thompson		
CAPACITY OR TITLE Chairman/CEO		DATE 5/8/2002		CAPACITY OR TITLE Plant Breeder	
		DATE 2/17/2000			

INSTRUCTIONS

2000003127

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$2,450 (\$300 filing fee and \$2,150 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. DO NOT use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$300 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvp.htm>

ITEM

- 18a. Give:
 - (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
 - (2) the details of subsequent stages of selection and multiplication;
 - (3) evidence of uniformity and stability; and
 - (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
 - (1) identify these varieties and state all differences objectively;
 - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
19. If "Yes" is specified (seed of this variety be sold by variety name only, as a class of certified seed), the applicant MAY NOT reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 5.5 of the Act for instructions on claiming the benefit of an earlier filing date.

22. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

23. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant must check the variety names proposed by contacting: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center—East, Beltsville, MD 20705. Telephone: (301) 504-8089.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Jamie L. Whitten Building, Washington, D.C. 20250. When replying, refer to OMB No. 0581-0055 and form number in your letter. Under the PRA of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-2791. To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 720-1127 (TDD). USDA is an equal opportunity employer.

S&T-470 (6-98) designed by the Plant Variety Protection Office with WordPerfect 6.0a. Replaces STD-470 (03-96) which is obsolete.

THE ARIZONA AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF ARIZONA
TUCSON, ARIZONA

NOTICE OF RELEASE OF AZ-MSFRS-86
QUALITY ENHANCED SEMI-DWARF DURUM WHEAT GERmplasm

The Arizona Experiment Station announces the annual release of updated and current male sterile facilitated recurrent selection (MSFRS) quality enhanced semi-dwarf durum wheat germplasm (*Triticum turgidum* L. var. durum). This genetically diverse population is suggested as a source of high yielding cultivars with superior pasta making qualities.

A genetic male sterile was obtained by chemical mutation treatment of seeds from the durum cultivar "1000 D". In the 1982 crossing year a broad diversified array of CIMMYT, Northern U.S., Canadian, and Italian durums and descendants of their hybridization (products of conventional pedigree and population breeding, 1975 to 1981) were utilized at the Mesa Agricultural Center in hand pollination of a segregating male sterile population obtained from Western Plant Breeders. University of Arizona MSFRS durum breeding was initiated with 700 controlled crosses on selected male sterile plants.

The breeding system consists of each year selecting large numbers of male fertile and genetically male sterile plants for adaptability, stiff-short straw, spike size, seed size and number, and freedom from yellow berry, tillering expression, freedom from disease, and a number of other genotypically and physiologically desirable characters for quality and yield. Crosses are made between selected plants using male steriles as female parents and between opposites in plant character combinations to maintain genetic diversity. The F_1 generation is grown at Bozeman, Montana each summer. The F_2 generation is grown in Arizona each winter, (since 1984 at the Maricopa Agricultural Center). It is planted at a very low seeding rate for Arizona adaptation, selection, and crossing. Cooperation of Peavey Company in 1982 and ConAgra in 1983-86 has been beneficial in identifying lines with superior semolina color, protein, and gluten strength. High yielding genotypes with superior quality characteristics are topcrossed back into the population for recombination of genes, as rapidly as selections with quality can be classified for yield.

AZ-MSFRS-86 quality enhanced semi-dwarf durum wheat germplasm is available for exploitation, particularly in the Southwest U.S. and similar irrigated environments. Population quantities of seed may be obtained from R. K. Thompson, Maricopa Agricultural Center, Rt 2 Box 751-F, Maricopa, Arizona 85239. Subsequent and updated germplasm will be available from the Plant Sciences Department of the College of Agriculture, University of Arizona, Tucson, Arizona and D. A. Smith, Jr., Curator, National Small Grains Collection, Grain Collections Building 046, Beltsville Agricultural Center-West, Beltsville, Maryland 20705. It is requested that appropriate recognition of source be

Exhibit A

Origin and Breeding History

'Crown' (D3117) is a semidwarf spring durum developed from World Wide Wheat, L.L.C.'s (W3's) 1993 male sterile facilitated recurrent selection (MSFRS) quality durum populations. A single F₂ head selection was taken in 1993 at Maricopa, Arizona. In the F₃ generation a "best plant" head selection was made at Moscow, Idaho under severe Hessian Fl pressure. Best plant selection continued through F₆. A F₇ breeder strip was grown in Ronan, Montana in 1997 as a base germplasm. A small increase and head rows were grown at Buttonwillow, California and certified by California Crop Improvement in 1998. In 1999 small increases were grown in Arizona and California out of the Karnal Bunt quarantine area by World Wide Wheat, L.L.C.. Crown is being licensed to Dunn Seed Company of Yuma, Arizona for commercialization in the year 2000; with seed increased of 49 acres. World Wide Wheat, L.L.C. is growing head rows and a one acre increase for potential maintenance and improvement of Breeder seed at Eloy, Arizona.

In 1997 and subsequent increases a limited number of male sterile and off type plants were rogued. As is frequently the case with genetic recessive MSFRS breeding, dominant black awns have been associated with the genetic recessive male sterile and dominant black awned and hybrid plants may occur. Because of the possibility of seed set on unidentified, genetically recessive male sterile plants and the history of black awn segregation in the original MSFRS population, male sterile and/or black awns may occur at the rate of .001%. Crown is stable in both performance and quality with no known variants. To reduce or eliminate offtype occurrence head rows are being grown in year 2000 for Foundation seed production in 2001.

Selection criteria utilized in development and exploitation of the "Desert Durum" population described in the attached supplements to Exhibit A and in the selection of Crown were: 1. The segregating generation 2, 3 and 4 were short stiff straw for high input production under irrigation, tillering expression, long and broad spikes as expressed by multiple seeds per rachis node, large seeds relatively free from black point and yellow berry and in the case of Crown, white chaff and awns which have repeatedly been associated with identity preserved desert durum varieties and the best of pasta products. 2. In generations 4, 5, 6 and beyond, grain yield, semolina and pasta color, protein % and gluten strength have determined the selection for Plant Variety Protection.

Germplasm Source Information for:

Supplement to Exhibit A

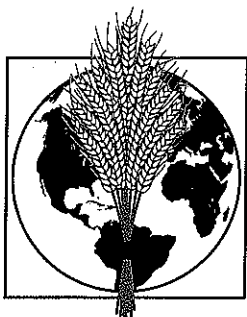
Crown (D3117)

The Durum cultivar, "Crown" (D3117) was selected from a broad base, diverse population, a modification and continuance of Arizona Male Sterile Facilitated Recurrent Selection, 1986 (AZ-MSFRS-86) Quality Enhanced Semidwarf Durum Wheat Germplasm Population, released by the University of Arizona.

This Durum population was developed over a period of six, 2-generation cycles (6 years and 12 generations) by MSFRS population breeding and originated from a broad and diversified array of CIMMYT, Northern US, Canadian and Italian Durum's and descendents of their hybridization assembled in 8 years of conventional pedigree and population breeding. Up to 1000 controlled crosses were made in each spring F₂ generation grown in Southern Arizona with high input, irrigation and nitrogen fertilizer. Approximately 50% were sibs and 50% were top crosses. The F₁ was increased in Montana or Idaho each summer. As this population was being developed for the irrigated Southwest Desert, short stiff straw, large seed size and many tillers with long, but broad and compact heads were selection criteria. Cultivars and lines used for top crosses were selected for yield and semolina quality characteristics. In the early cycles, among established cultivars most often repeated for yield top crossing were "Yavaros 79", "Mexicali 75" and "Westbred Turbo". Among the established cultivars most often used for semolina quality top crosses were "Vic", "Wakoona", "Wascona", "Cando", "Edmore", "Leeds", "Lloyd", "Monroe" and "Westbred 881".

Subsequently in addition to the above top cross sources after repeated selection and recombination, lines with superior yield and excellent semolina quality of gluten strength, protein and color were selected from within the population such as "Durex" and "Reva" for quality and "Duraking" for yield.

The source germplasm for the original male sterile gene was chemically mutated "1000D". Subsequently a chemically mutated male sterile gene from "Mexicali 75" has been incorporated into the population. A copy of the University of Arizona Experiment Station Notice of Release is attached.



WORLD WIDE
WHEAT L.L.C.

Sowing Opportunity

May 4, 2001

Mr. Mark Hermeling,
Associate Plant Variety Examiner
Plant Variety Protection Office
NAL Building, Room 500
10301 Baltimore Boulevard
Beltsville, MD 20705-2351

Dear Mr. Hermeling:

Subject: Application No. 200000312, Wheat, Durum, 'Crown'

This is our amendment to Exhibit A, which you requested in your letter of March 27, 2001, i.e. Evidence of Uniformity and Stability.

Crown is uniform and stable with no known variants and has been observed to be uniform and stable 1997 through 2000. Yield and quality values present in 1996 have been confirmed each year.

This information should follow the 2nd paragraph of Exhibit 'A'.

Thank you for your consideration.

Sincerely,

Rex K. Thompson
Plant Breeder and Developer of "Crown" durum

Exhibit B

Novelty Statement

Crown most closely resembles the variety Bravadur, except for the following differences:

1. Awns of Crown are longer than those of Bravadur. Of 100 awn measurements from each variety taken from the central one-third of spikes. Crown awns averaged 17.6 cm in length and Bravadur awns averaged 14.9 cm. Significant at the .05 level of significance. ANOVA attached.
2. Average test weights for Crown grain are lower than those for Bravadur. For each of 8 location years Crown test was lower and averaged 62.4 pounds per bushel. 1.6 pounds per bushel less than Bravadur at 64.0 pounds per bushel (Table 2c).
3. Average plant height for Crown is greater than for Bravadur. For each of 8 location years Crown plants were taller than those of Bravadur. Average plant height of Crown was 40.2 inches vs 37.5 inches for Bravadur. A difference of 2.7 inches.
4. Glume beaks of Crown are 3 mm long, glume beaks of Bravadur are very long for durum wheat; 8 mm or more.

2000003127

WORLD WIDE WHEAT, L.L.C

Sun Valley Research Station
892 Gilmour St.,
Morden R6M 1R9
Canada

Telephone: (204) 325 - 0014
Facsimile: (204) 325 - 0906

Fax**To: REX****From: CHARLES****Fax: (602) 470 - 1685****Pages: 2 (including cover page)****Phone: (602) 470 - 1345****Date: 2/3/00****Re: BRAVADUR AND CROWN****CC:**

☐ Urgent ☐ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

Dear Rex,

Please, find attached the results of the data analysis comparison of the spike lengths between Bravadur and Crown. An average value was calculated for each set of values in a row. Therefore, 10 sets of averages for each variety were used for the analysis.

If you have any questions, please do not hesitate to let me know.

Thanks.

CHARLES.

2000003127

Comparison of Spike Lengths - Bravadur and Crown

The ANOVA Procedure

Class Level Information

Class	Levels	Values
block	10	1 2 3 4 5 6 7 8 9 10
variety	2	1 2

Number of observations 20
Comparison of Spike Length between Bravadur and Crown

The ANOVA Procedure

Dependent Variable: Spike Length

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	45.33400000	4.533400000	5.27	0.0099
Error	9	7.74600000	0.860888889		
Corrected Total	19	53.08200000			

R-Square Coeff Var Root MSE spklnth Mean
0.854037 5.716827 0.927841 16.23000

Source	DF	Anova SS	Mean Square	F Value	Pr > F
block	9	6.342000000	0.926888889	1.08	0.4571
variety	1	36.992000000	36.992000000	42.97	0.0002

Comparison of Spike Length between Bravadur and Crown

Paired t-Test for Bravadur and Crown

t Tests (LSD) for spklnth

NOTE: This test controls the type I comparisonwise error rate not the experimentwise error rate.

alpha 0.05
Error Degrees of Freedom 9
Error Mean Square 0.8608889
Critical Value of t 2.26216
Least Significant Difference 0.9387

Means with the same letter are not significantly different.

t Grouping	Mean	N	variety
A	17.5900	10	CROWN
B	14.8700	10	BRAVADUR

THE SPIKE LENGTH OF CROWN IS SIGNIFICANTLY HIGHER THAN THE SPIKE LENGTH OF BRAVADUR, ACCORDING TO THE LSD TEST AT 5% LEVEL OF SIGNIFICANCE.

2000003127

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*Triticum* spp.)

NAME OF APPLICANT(S)

World Wide Wheat, L.L.C.

ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code)

2850 South 36th Street
Suite A-9
Phoenix, Arizona 85034

FOR OFFICIAL USE ONLY

PVPO NUMBER

VARIETY NAME

Crown

TEMPORARY OR EXPERIMENTAL
DESIGNATION

D3117

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g., or) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used:

Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND:

2

1=Common

2=Durum

3=Club

4=Other (SPECIFY) _____

2. VERNALIZATION:

1

1=Spring

2=Winter

3=Other (SPECIFY) _____

3. COLEOPTILE ANTHOCYANIN:

1

1=Absent

2=Present

4. JUVENILE PLANT GROWTH:

3

1=Prostrate

2=Semi-erect

3=Erect

5. PLANT COLOR (boot stage):

2

1 = Yellow-Green

2 = Green

3 = Blue-Green

6. FLAG LEAF (boot stage):

1

1 = Erect

2 = Recurved

1

1 = Not Twisted

2 = Twisted

7. EAR EMERGENCE:

2

Number of Days Earlier Than Cortez *

2

Number of Days Later Than Reva *

8. ANTER COLOR:

1

1 = YELLOW

2 = PURPLE

9. PLANT HEIGHT (from soil to top of head, excluding awns):

6

cm Taller Than Bravadur and Reva *

3

cm Shorter Than Ocotillo *

* Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial

10. STEM:

A. ANTHOCYANIN

☐ 1 = Absent 2 = Present

B. WAXY BLOOM

☐ 2 = Absent 2 = Present

C. HAIRINESS (last internode of rachis)

☐ 2 = Absent 2 = Present

D. INTERNODE (SPECIFY NUMBER) 4

☐ 1 = Hollow 2 = Semi-solid 3 = Solid

E. PEDUNCLE

☐ 2 = Absent 2 = Present

☐ 44 cm Length

11. HEAD (at Maturity):

A. DENSITY

☐ 2 = Lax 2 = Middense 3 = Dense

B. SHAPE

☐ 4 = Tapering 2 = Strap 3 = Clavate 4 = Other (SPECIFY) slightly Tapering

Wider across the
two-row profile
than the face

C. CURVATURE

☐ 2 = Erect 2 = Inclined 3 = Recurved

D. AWNEDNESS

☐ 4 = Awnless 2 = Apically Awnletted 3 = Awnletted 4 = Awned

12. GLUMES (at Maturity):

A. COLOR

☐ 1 = White 2 = Tan 3 = Other (SPECIFY) _____

B. SHOULDER

☐ 5 = Wanting 2 = Oblique 3 = Rounded 4 = Square 5 = Elevated 6 = Apiculate

C. BEAK

☐ 2 = Obtuse 2 = Acute 3 = Acuminate

D. LENGTH

☐ 3 = Short (ca. 7mm) 2 = Medium (ca. 8mm) 3 = Long (ca. 9mm)

E. WIDTH

☐ 3 = Narrow (ca. 3mm) 2 = Medium (ca. 3.5mm) 3 = Wide (ca. 4mm)

13. SEED:

A. SHAPE

☐ 3 = Ovate 2 = Oval 3 = Elliptical

B. CHEEK

☐ 1 = Rounded 2 = Angular

C. BRUSH

☐ 3 = Short 2 = Medium 3 = Long

☐ 1 = Not Collared 2 = Collared

D. CREASE

☐ 1 = Width 60% or less of Kernel
2 = Width 80% or less of Kernel
3 = Width Nearly as Wide as Kernel

☐ 1 = Depth 20% or less of Kernel
2 = Depth 35% or less of Kernel
3 = Depth 50% or less of Kernel

13. SEED: (continued)

E. COLOR

☐ 2

1 = White

2 = Amber

3 = Red

4 = Other (SPECIFY) _____

F. TEXTURE

☐ 1

1 = Hard

2 = Soft

G. PHENOL REACTION (see instructions):

☐ 0-1

1 = Ivory

2 = Fawn

3 = Light Brown

4 = Dark Brown

5 = Black

0 = No reaction

14. DISEASE: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)
PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTEDStem Rust (*Puccinia graminis* f. sp. *tritici*)☐ 2Has exhibited field resistance
Race unknownStripe Rust (*Puccinia striiformis*)☐ 3Field Obs. - Specific tests
not runTan Spot (*Pyrenophora tritici-repentis*)☐ 0Halo Spot (*Selenophoma donacis*)☐ 0

Septoria nodorum (Glume Blotch)

☐ 0

Septoria avenae (Speckled Leaf Disease)

☐ 0

Septoria tritici (Speckled Leaf Blotch)

☐ 0Scab (*Fusarium* spp.)☐ 0

"Black Point" (Kernel Smudge)

☐ 0

Barley Yellow Dwarf Virus (BYDV)

☐ 0

Soilborne Mosaic Virus (SBMV)

☐ 0

Wheat Yellow (Spindle Streak) Mosaic Virus

☐ 0

Wheat Streak Mosaic Virus (WSMV)

☐ 0

Other (SPECIFY) _____

☐ 0

Other (SPECIFY) _____

☐

Other (SPECIFY) _____

☐Leaf Rust (*Puccinia recondita* f. sp. *tritici*)☐ 2Has exhibited field resistance
Race unknownLoose Smut (*Ustilago tritici*)☐ 0Flag Smut (*Urocystis agropyri*)☐ 0Common Bunt (*Tilletia tritici* or *T. laevis*)☐ 0Dwarf Bunt (*Tilletia controversa*)☐ 0Karnal Bunt (*Tilletia indica*)☐ 0Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*)☐ 3

Field Obs. Specific tests not run

"Snow Molds"

☐ 0Common Root Rot (*Fusarium*, *Cochliobolus* and *Bipolaris* spp.)☐ 0Rhizoctonia Root Rot (*Rhizoctonia solani*)☐ 0Black Chaff (*Xanthomonas campestris* pv. *translucens*)☐ 0Bacterial Leaf Blight (*Pseudomonas syringae* pv. *syringae*)☐ 0

Other (SPECIFY) _____

☐ 0

Other (SPECIFY) _____

☐

Other (SPECIFY) _____

☐

Other (SPECIFY) _____

☐

15. INSECT:

(0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

Hessian Fly (*Mayetiola destructor*)☒ 2F3 selection was made under
Hessian Fly pressure.

Other (SPECIFY) _____

☐ 0Stem Sawfly (*Cephus* spp.)☐ 0

Other (SPECIFY) _____

☐Cereal Leaf Beetle (*Oulema melanopa*)☐ 0

Other (SPECIFY) _____

☐Russian Aphid (*Diuraphis noxia*)☐ 0

Other (SPECIFY) _____

☐Greenbug (*Schizaphis graminum*)☐ 0

Other (SPECIFY) _____

☐

Aphids

☐ 0

Other (SPECIFY) _____

☐

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS:

Exhibit D

Additional Description

"Crown", like "Bravadur" is a semidwarf, spring durum with superior semolina characters of color, protein content, gluten content and strength and cooking stability making it suitable for marketing as a identity preserved Desert Durum.

Crown has been tested and is adapted to optimum fertility and irrigated production in Arizona and California. For nineteen location years of testing, grain yield of Crown exceeded that of Bravadur and Duraking. The high yielding identity preserved Desert Durum. Performance data Tables 1 to 6 indicate test weights lower than Bravadur and the other quality varieties. However, seed size and weight was similar to Bravadur and superior to Duraking and Ria. Plant height was 2.7 inches taller than Bravadur and the tallest of the group. The extra height did not reflect in extra lodging.

Plant appearance is quite similar to Bravadur in many ways. They both have white chaff and awns and a head type in which the spike is wider across the two-row profile than the face. Seeds of Crown are similar to Bravadur seeds in size, they are elliptical with shallow rounded cheeks, with a long brush, very bright and yellow amber in color. Juvenile growth is erect and relatively non-pigmented. Flag Leaf is erect green and not twisted at the boot stage of growth. Spikes are mid-dense, glumes are wide, long and glabrous, have elevated to apiculate shoulders, acuminate beaks over 3 mm in length. Awns of Crown are extra long. Arizona is relatively free of most disease so a comprehensive view of disease reaction is not available. Crown is resistant to stripe rust and has exhibited field resistance to leaf and stem rust and is at least moderately resistant or tolerant to septoria and powdery mildew.

Application for Variety Certification

Table 1 a-b.

CROWN grain yield comparisons in pounds per acre**Yield comparisons for 9 location years****World Wide Wheat, L.L.C. and the University of Arizona Cooperative Testing 1996 - 1999.**

CROWN	Duraking	RIA	Reva	Durex	Bravadur	Platinum	Globe
7273	7272	7091	6954	6387	6554	7303	7156

Average grain yield for 10 location years**Taken from the University of California Davis Agronomy Progress reports 1998 and 1999.**

CROWN	Duraking	RIA	Reva	Westbred 881	Deluxe	Kronas	Cortez
6438	6202	6202	5849	4998	6111	6023	6478

Table 2 a-c.

CROWN grain test weight comparisons in pounds per bushel**Average test weight for 8 location years****World Wide Wheat, L.L.C. and the University of Arizona Cooperative Testing 1997 - 1999.**

CROWN	Duraking	RIA	Reva	Durex	Bravadur	Platinum	Globe
62.4	65.1	64.9	64.0	64.1	64.0	64.4	63.6

Average test weight for 6 location years**Taken from the University of California Davis Agronomy Progress reports 1998 and 1999.**

CROWN	Duraking	RIA	Reva	Westbred 881	Deluxe	Kronas	Cortez
61.4	63.6	63.2	62.8	62.0	63.3	62.8	63.0

Average test weight for 8 location years**World Wide Wheat, L.L.C. and the University of Arizona Cooperative Testing 1996 - 1999.**

	Crown	Bravadur	Duraking	Durex	Reva	.Ria
Maricopa, AZ W ³ 1996	63.0	64.0	65.0	64.0	64.0	67.0
Maricopa, AZ W ³ 1997	63.5	64.5	65.0	64.0	64.0	67.0
Murphree, AZ W ³ 1998	63.0	65.0	66.6	66.6	64.4	65.0
Buttonwillow, CA W ³ 1999	62.2	65.4	67.2	65.4	66.0	67.2
U of A, Yuma, AZ WPB 1998	61.4	62.3	64.0	62.8	62.9	62.9
U of A, Maricopa, AZ 1998	61.6	62.8	63.9	62.7	62.7	63.4
U of A, Yuma, AZ 1998	63.0	63.8	64.4	64.1	63.9	62.5
U of A, Marana, AZ APB 1998	61.5	63.9	64.7	62.9	63.9	64.4
Average	62.4	64.0	65.1	64.1	64.0	64.9

Application for Variety Certification

Table 3 a-b.

CROWN seed weight comparisons as grams per 1,000 kernels.**Average seed weight for 6 location years****World Wide Wheat, L.L.C. and the University of Arizona Cooperative Testing 1997 - 1999.**

CROWN	Duraking	RIA	Reva	Durex	Bravadur	Platinum	Globe
53.6	51.5	48.6	53.0	56.4	53.3	46.6	56.6

Average seed weight for 3 location years**Taken from the University of California Davis Agronomy Progress reports 1998 and 1999.**

CROWN	Duraking	RIA	Reva	Westbred 881	Topper	Kronas	Platinum
50.2	48.9	43.6	49.8	56.7	43.0	57.0	48.0

Table 4 a-b.

CROWN average plant height at maturity comparisons in inches**Average plant height for 8 location years****World Wide Wheat, L.L.C. and the University of Arizona Cooperative Testing 1997 - 1999.**

	Crown	Bravadur	Duraking	Durex	Reva	Ria
Maricopa, AZ W ³ 1996	38	35	35	37	36	39
Maricopa, AZ W ³ 1997	36	34	33	34	32	33
Murphree, AZ W ³ 1998	45	41	39	44	40	43
Buttonwillow, CA W ³ 1999	42	38	38	38	38	38
U of A, Yuma, AZ 1998	42	39	38	40	40	40
U of A, Maricopa, AZ 1998	36	33	33	34	33	32
Marana, AZ APB 1998	43	42	37	40	42	40
Yuma, AZ WPB 1998	40	38	36	38	39	37
Average	40.2	37.5	36.1	38.1	37.5	37.8

Average plant height for 10 location years**Taken from the University of California Davis Agronomy Progress reports 1998 and 1999.**

CROWN	Duraking	Reva	RIA	Westbred 881	Cortez	Kronas	Deluxe
38.5	36.1	36.5	37.0	37.3	37.6	36.3	37.8

Application for Variety Certification

Table 5 a-b.

CROWN lodging at maturity comparisons**Average percent lodged for 7 location years****World Wide Wheat, L.L.C. and the University of Arizona Cooperative Testing 1997 - 1999.**

CROWN	Duraking	Reva	RIA	Durex	Bravadur	Globe	Platinum
2.1	1.6	8.1	9.3	0.0	1.0	1.7	12.0

Average lodge rating (1=0.0 to 3.0%, 8=96 to 100%) for 8 location years**Taken from the University of California Davis Agronomy Progress reports 1998 and 1999.**

CROWN	Duraking	Reva	RIA	Westbred 881	Kronas	Cortez	Eddie
2.4	3.0	2.9	3.2	2.5	3.6	2.5	2.3

Table 6 a.

CROWN maturity (50% headed) comparisons, days after March 1st**World Wide Wheat, L.L.C. and the University of Arizona Cooperative testing 1996 - 1999
for 7 location years**

CROWN	Bravadur	Duraking	Ria	Reva	Durex	Platinum	Globe
30	29	30	31	26	27	30	31

Table 7 a.

CROWN % grain protein comparisons, 12% moisture base**Combined Arizona and California data from 7 location years**

CROWN	Duraking	Reva	RIA	Durex	Bravadur	Globe
14.0	13.0	14.4	13.6	14.3	14.1	13.8

Application for Variety Certification

Table 8 a.

Crown quality screening comparisons for protein and gluten strength

			Quality Checks					
	D3117 CROWN	Bravadur	DUREX	WESTBRED 881	DURAKING	Reva	D9430 PLATINUM	Globe
Protein %								
1992 - 94	15.6	16.0	15.0	15.2	13.8	14.8	14.3	16.3
1995	14.1	13.1	13.2	--	12.0	17.8	12.0	13.1
1997	14.8	14.1	14.4	--	13.5	--	14.0	14.8
1999	17.0	18.3	17.6	17.9	17.0	19.0	17.1	18.4
SDS - Sedimentation								
1994	9.6	10.0	10.6	9.6	7.0	9.7	10.2	11.8
1995	8.0	8.0	8.0	--	6.2	9.4	7.4	7.6
1997	8.0	7.6	8.8	--	6.8	--	7.2	8.2
1999	8.2	7.8	9.4	8.8	7.6	8.2	9.4	8.6

Application for Variety Certification

Table 9 a.

Comparative quality data for CROWN for 3 location years

Grain	Crown	Duraking	¹Reva	Ria	PLATINUM	Deluxe	D2656	Topper D1128
Protein % (12% _m)	14.3	12.8	14.2	13.5	13.4	13.2	13.2	13.2
Ash %	1.6	1.7	1.8	1.7	1.7	1.6	1.7	1.6
Test Weight (lbs/bu)	61.7	64.1	62.9	63.5	62.9	63.8	64.0	64.2
1,000 Kernel wt.	49.3	50.4	52.2	48.7	48.1	51.2	49.3	45.7
Milling								
Total Flour %	76.4	73.8	73.7	76.6	75.4	75.6	75.6	72.4
Semolina %	63.9	63.3	63.0	64.7	64.2	65.3	63.9	63.5
Semolina								
Protein %	13.3	11.4	13.3	12.6	12.6	13.0	12.1	12.1
Ash %	.75	.67	.80	.78	.81	.74	.74	.72
Speck	.20	.16	.19	.30	.23	.11	.23	.19
Alveograph – W	170	169	185	208	230	171	142	153
Alveograph – P/L	1.1	1.9	1.1	1.5	1.2	1.6	.93	1.2
Wet Gluten %	41.9	31.5	41.5	35.2	38.1	39.0	37.5	36.0
Dry Gluten %	16.2	11.8	18.6	13.9	14.8	14.7	14.3	14.2
Color (b value)	26.1	23.1	25.1	26.3	26.8	21.1	23.4	22.9
Pasta								
Color (COR)	9.8	8.0	8.9	9.2	9.7	7.5	9.0	8.3
Cooked wt (g)	29.7	30.3	29.9	30.0	30.2	30.0	29.6	30.4
Cooked loss %	6.5	7.0	6.7	7.0	6.9	7.6	6.5	6.6
Firmness (gcm)	8.1	6.5	7.8	7.2	7.1	7.0	7.6	6.9

¹The Reva check data was taken from the 1994 production year

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) World Wide Wheat, L.L.C.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER D3117	3. VARIETY NAME Crown
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 2850 South 36th Street Suite A-9 Phoenix, Arizona 85034	5. TELEPHONE (include area code) 602/470-1345	6. FAX (include area code) 602/470-1685
	7. PVPO NUMBER 2000003121	

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain. ☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company?
If no, give name of country ☒ YES ☐ NO

10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

☐ YES ☐ NO If no, give name of country

b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (if needed, use reverse for extra space):
The variety for which Plant Variety Protection is hereby sought was developed by Rex K. Thompson, an employee of World Wide Wheat, L.L.C. by agreement between employee and World Wide Wheat, L.L.C., all rights to any invention, discovery or development made by the employee while employed by World Wide Wheat, L.L.C. are assigned to World Wide Wheat, L.L.C. with no ownership rights pertaining to Crown being retained by the employee. By implied and separate agreement between Rex K. Thompson and World Wide Wheat, L.L.C., part of the royalty income from Crown is assigned to the employee.

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

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Exhibit E
Statement of Basis of Applicants Ownership

Crown, the variety for which Plant Variety Protection is hereby sought was developed by Rex K. Thompson, an employee of World Wide Wheat,L.L.C.. By agreement between employees and World Wide Wheat,L.L.C., all rights to any invention, discovery, or development made by the employee while employed by World Wide Wheat,L.L.C. are assigned to World Wide Wheat,L.L.C., with no ownership rights being retained by the employee.

By implied and separate agreement between Rex K. Thompson and World Wide Wheat,L.L.C. part of the royalty income from Crown is assigned to the employee.